SETTING INSPECTION CONDITIONS (PRIOR ART)   **FIG.1**

PREPARE WAFER

LOAD WAFER INTO DEVICE

ENTER WAFER SIZE

ENTER PRODUCT NAME
AND PROCESS NAME

SPECIFY AREAS TO
BE INSPECTED
　CHIP MATRIX
　SHOT MATRIX
　CHIP SIZE
　CHIPS TO BE INSPECTED
　　AND CHIPS TO BE EXCLUDED
　INSPECTION DIRECTION
　ALIGNMENT CHIP

ALIGNMENT
　INPUT ALIGNMENT
　　PATTERN IMAGES
　IMPLEMENT ALIGNMENT

SET SPACIAL FILTER

SET AREAS TO BE INSPECTED
AND AREAS TO BE EXCLUDED

TRIAL INSPECTION

CONFIRM (REVIEW)
INSPECTION RESULTS

SET SENSITIVITY CONDITIONS
　LASER POWER
　THRESHOLD VALUE

SAVE INSPECTION CONDITIONS

UNLOAD WAFER

END

☐ ITEMS SET AND OPERATED
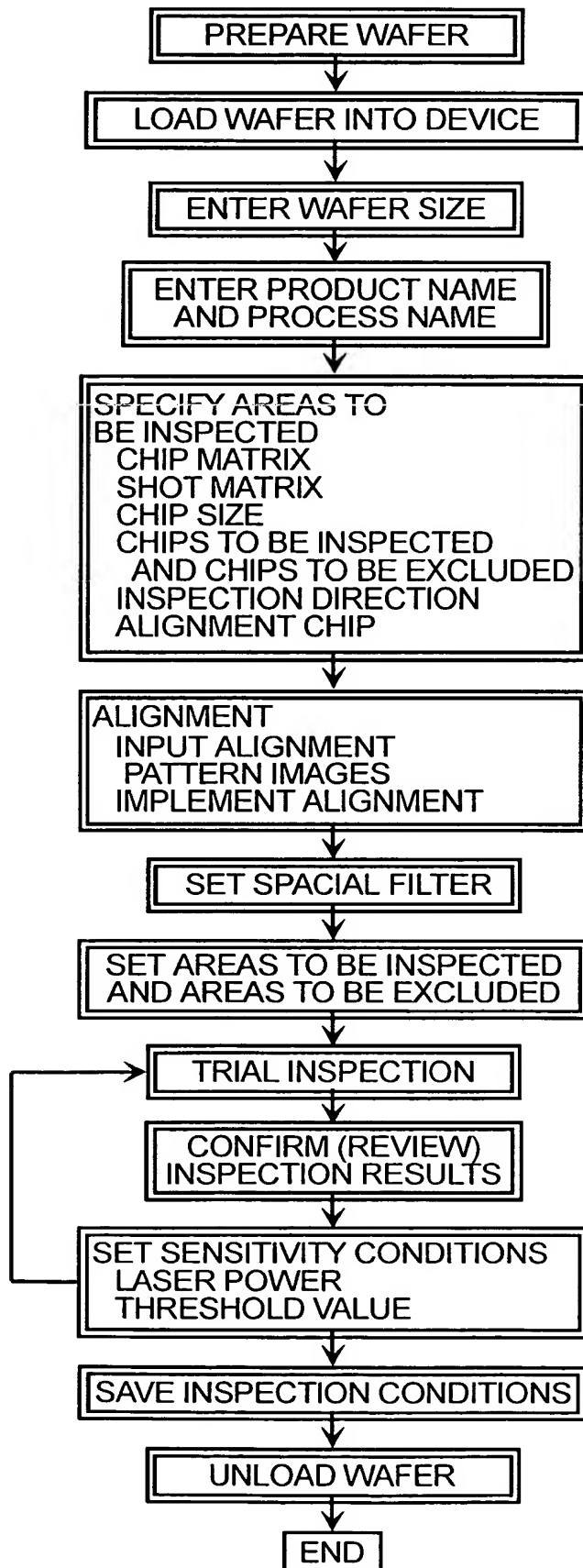BY WORKER

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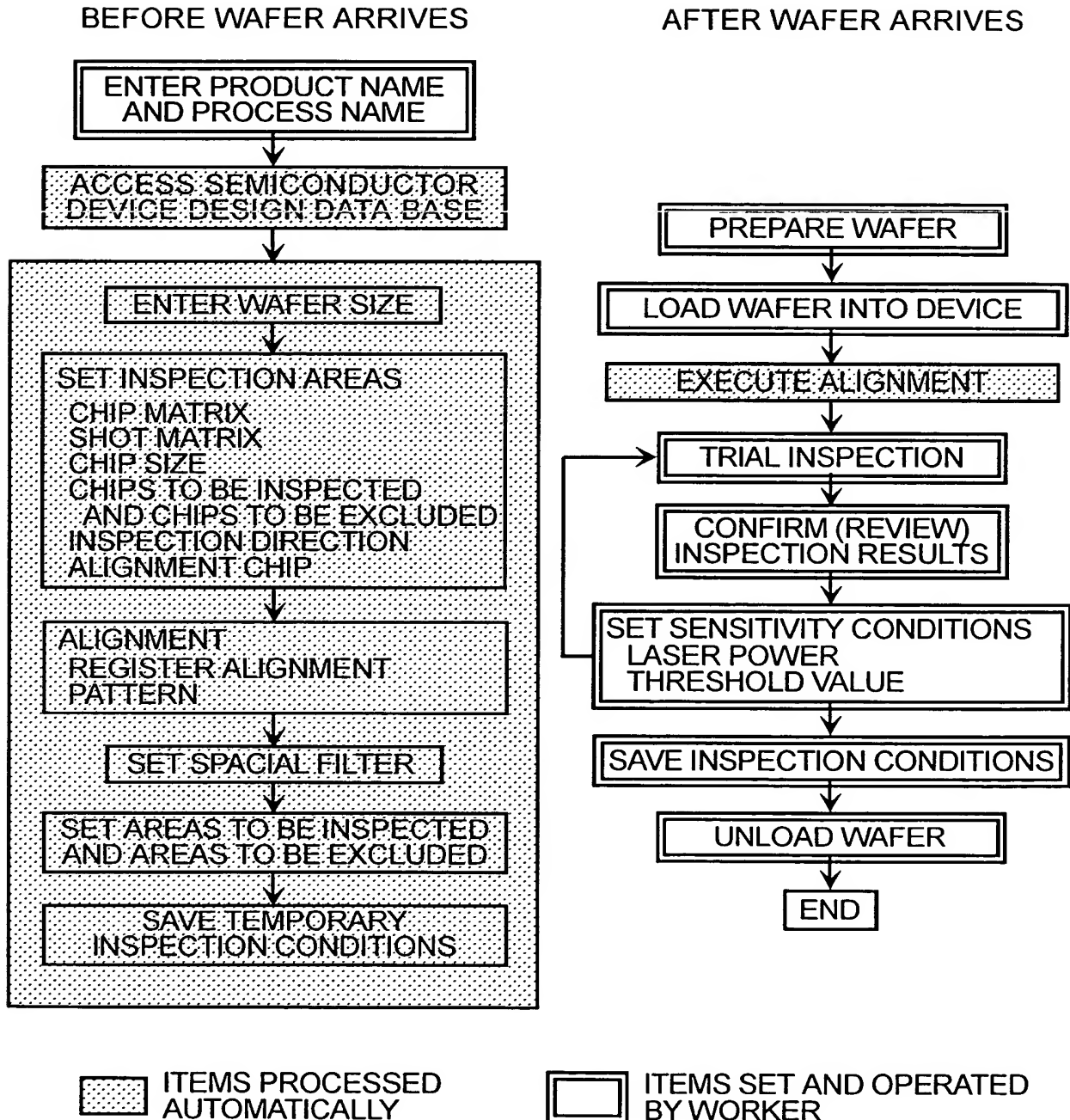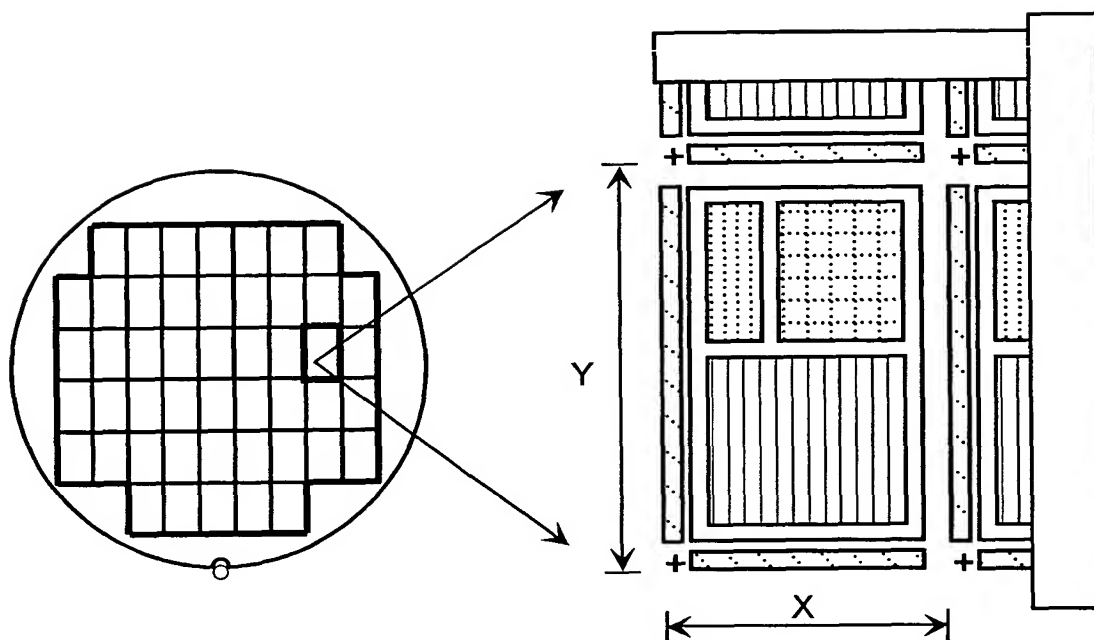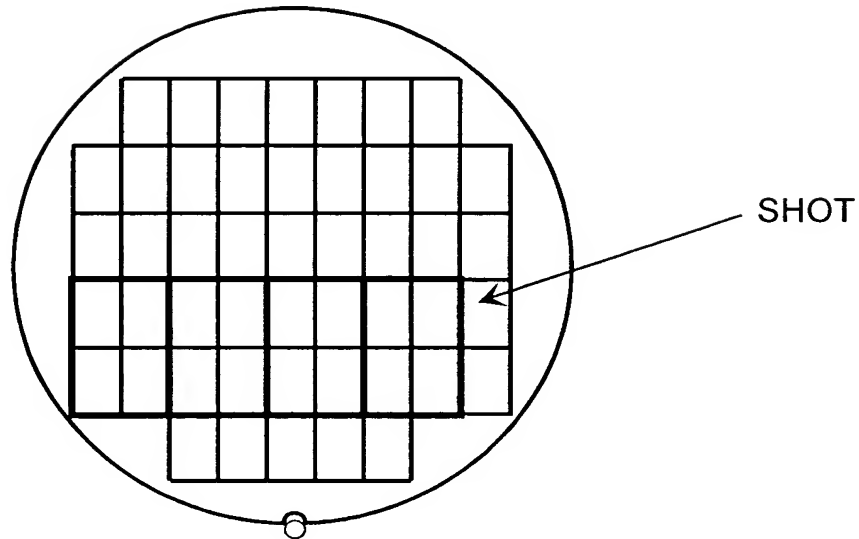# FIG.2

SETTING INSPECTION CONDITIONS

BEFORE WAFER ARRIVES

ENTER PRODUCT NAME
AND PROCESS NAME

↓

ACCESS SEMICONDUCTOR
DEVICE DESIGN DATA BASE

↓

ENTER WAFER SIZE

↓

SET INSPECTION AREAS
CHIP MATRIX
SHOT MATRIX
CHIP SIZE
CHIPS TO BE INSPECTED
  AND CHIPS TO BE EXCLUDED
INSPECTION DIRECTION
ALIGNMENT CHIP

↓

ALIGNMENT
  REGISTER ALIGNMENT
  PATTERN

↓

SET SPACIAL FILTER

↓

SET AREAS TO BE INSPECTED
AND AREAS TO BE EXCLUDED

↓

SAVE TEMPORARY
INSPECTION CONDITIONS

AFTER WAFER ARRIVES

PREPARE WAFER

↓

LOAD WAFER INTO DEVICE

↓

EXECUTE ALIGNMENT

↓

TRIAL INSPECTION

↓

CONFIRM (REVIEW)
INSPECTION RESULTS

↓

SET SENSITIVITY CONDITIONS
LASER POWER
THRESHOLD VALUE

↓

SAVE INSPECTION CONDITIONS

↓

UNLOAD WAFER

↓

END

☐ ITEMS PROCESSED AUTOMATICALLY

☐ ITEMS SET AND OPERATED BY WORKER

FIG.3

SETTING CHIP SIZE

FIG.4

SHOT

SETTING SHOT MATRIX

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FIG.5

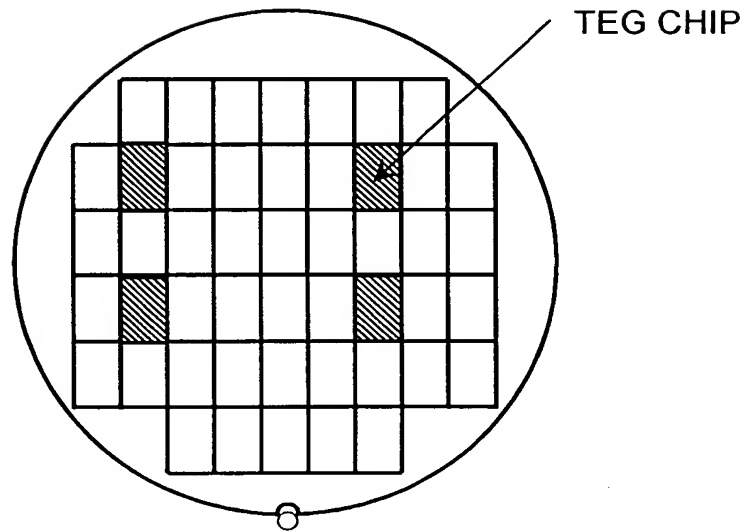## (A)

SHOT

(B)

| SHOT COMPARISON | CHIP COMPARISON | CELL COMPARISON |
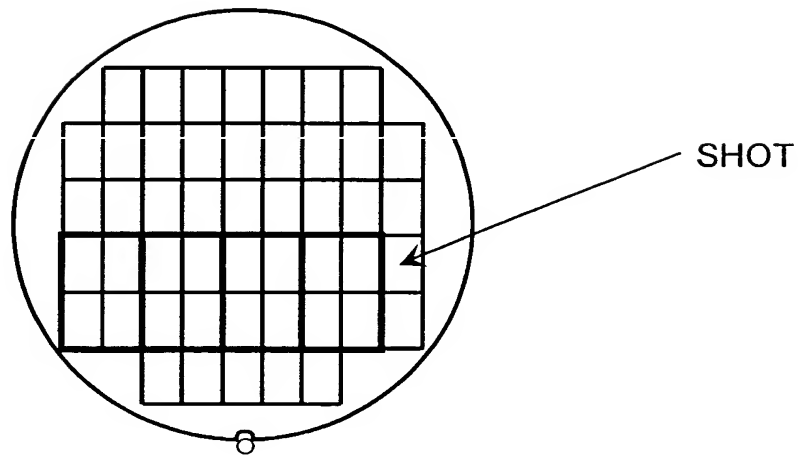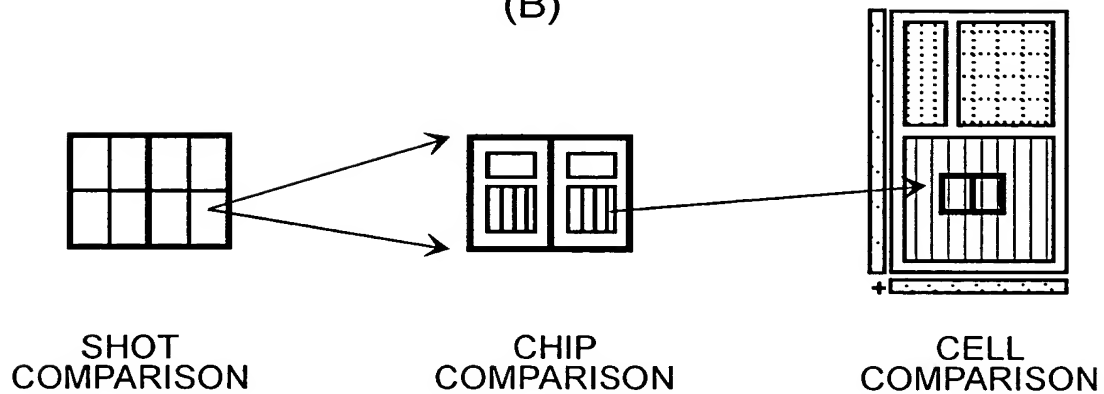
SET THE COMPARISON METHOD TO SUIT THE
REPETITIVE UNIT

SETTING THE INSPECTION SEQUENCE

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FIG.6

TEG CHIP

SETTING CHIPS TO BE EXCLUDED
FROM INSPECTION

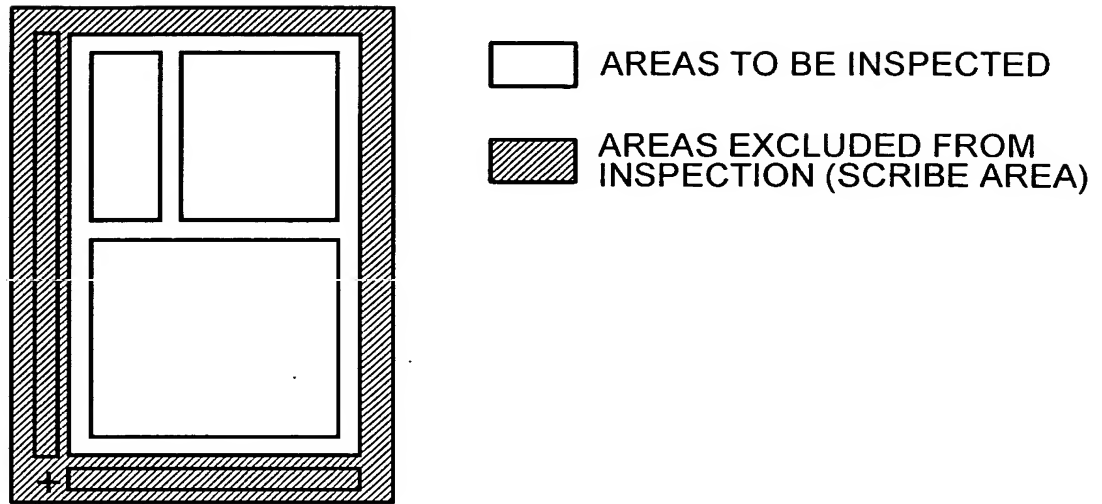Robert C. Colwell, Reg. No. 27,431   (650) 326-2400
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FIG.7

SETTING AREAS TO BE INSPECTED
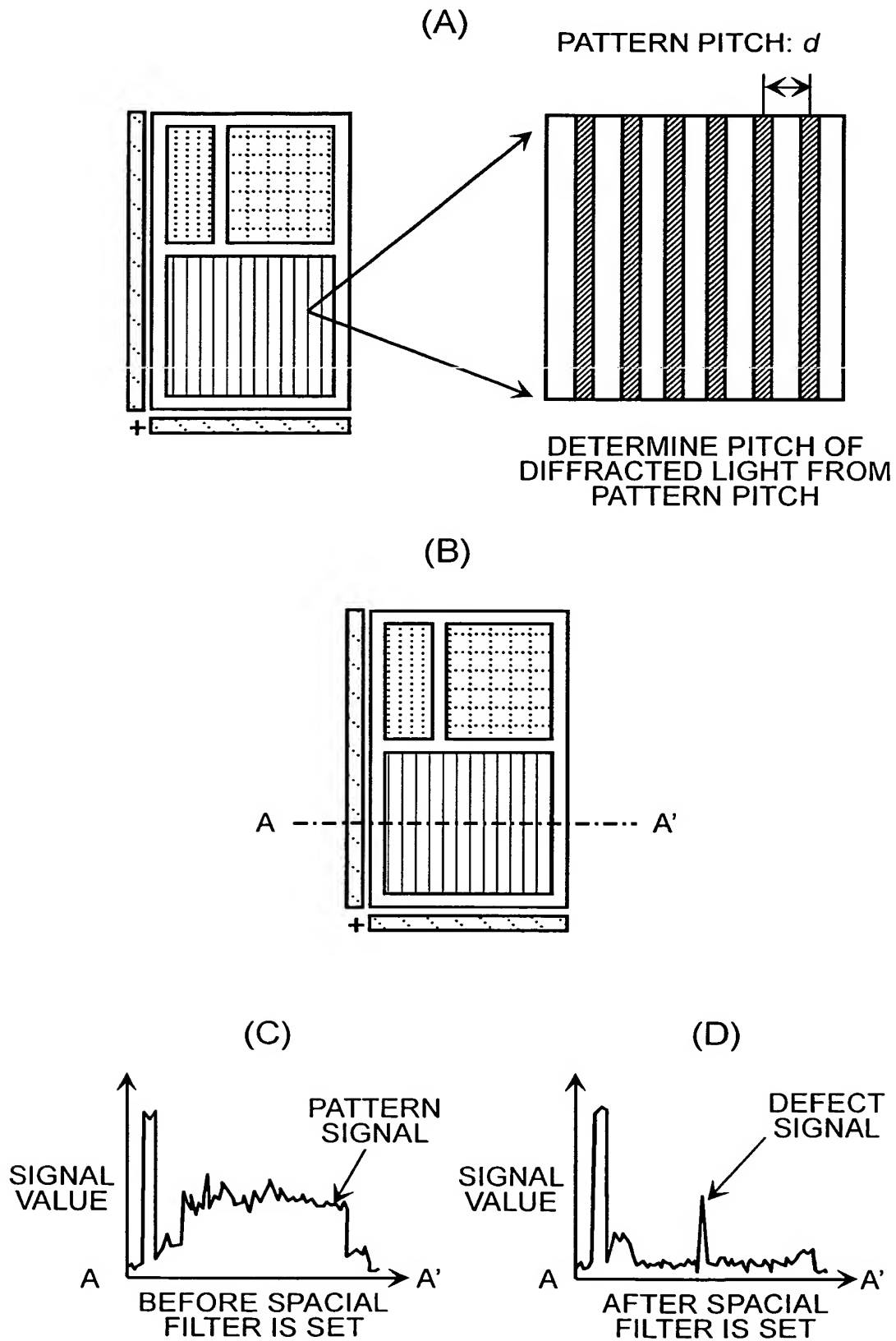AND AREAS TO BE EXCLUDED

☐ AREAS TO BE INSPECTED

▨ AREAS EXCLUDED FROM
INSPECTION (SCRIBE AREA)

FIG.8

SETTING THE
ALIGNMENT PATTERN
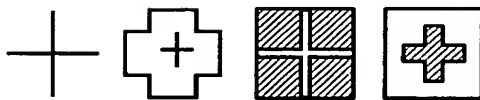
SELECT PATTERNS AND MATERIAL
THAT WILL MAKE IMAGES EASILY
RECOGNISABLE DURING ALIGNMENT
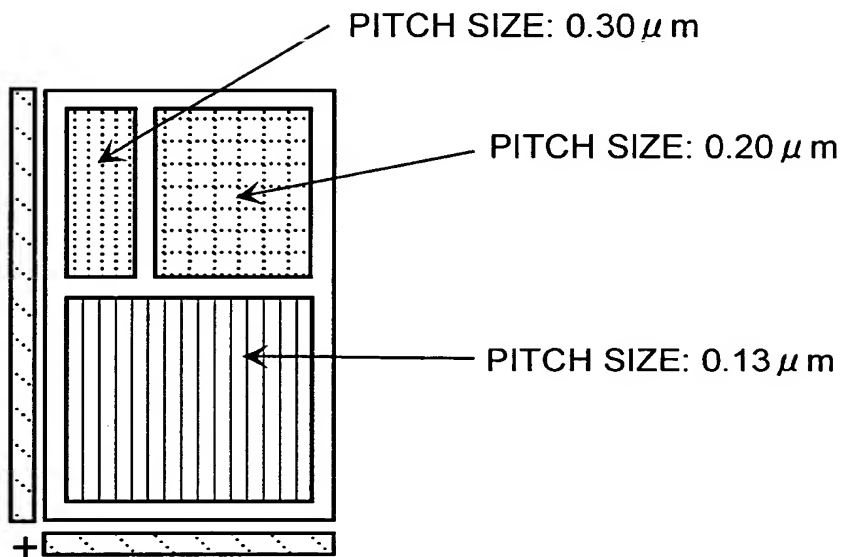
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FIG.9

(A)

PATTERN PITCH: *d*

DETERMINE PITCH OF
DIFFRACTED LIGHT FROM
PATTERN PITCH

(B)

A —·—·—·— A'

(C)

PATTERN
SIGNAL

SIGNAL
VALUE

A   A'
BEFORE SPACIAL
FILTER IS SET

(D)

DEFECT
SIGNAL

SIGNAL
VALUE

A   A'
AFTER SPACIAL
FILTER IS SET

FIG.10

PITCH SIZE: 0.30 μ m

PITCH SIZE: 0.20 μ m

PITCH SIZE: 0.13 μ m

FATALITY JUDGEMENT
(BY PRODUCT, PROCESS, AND AREA)

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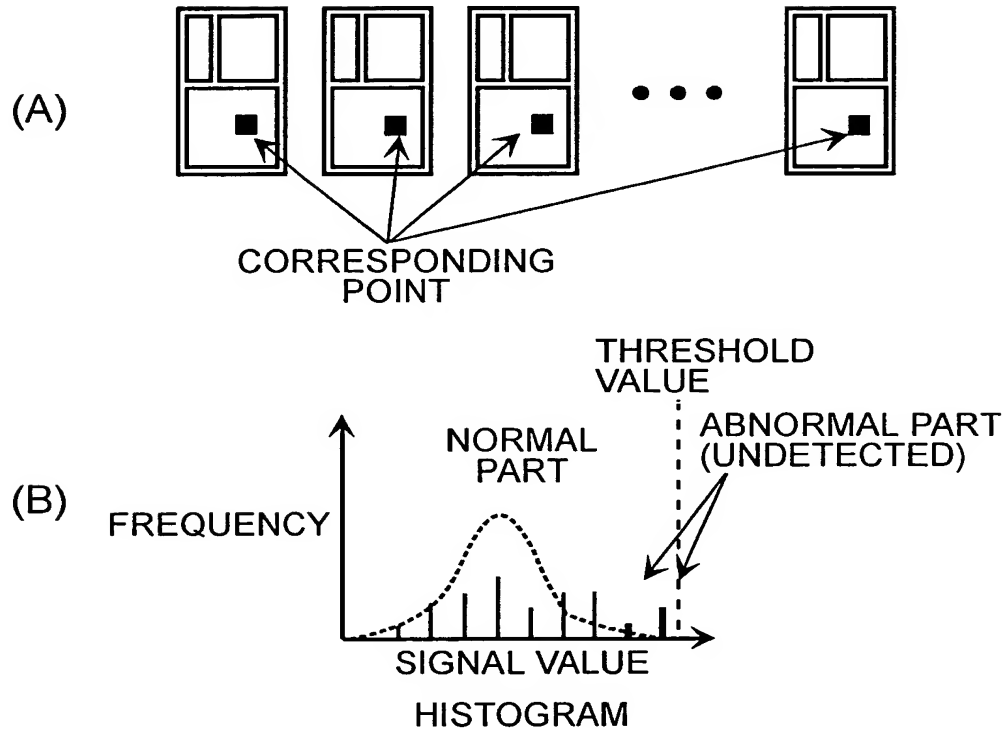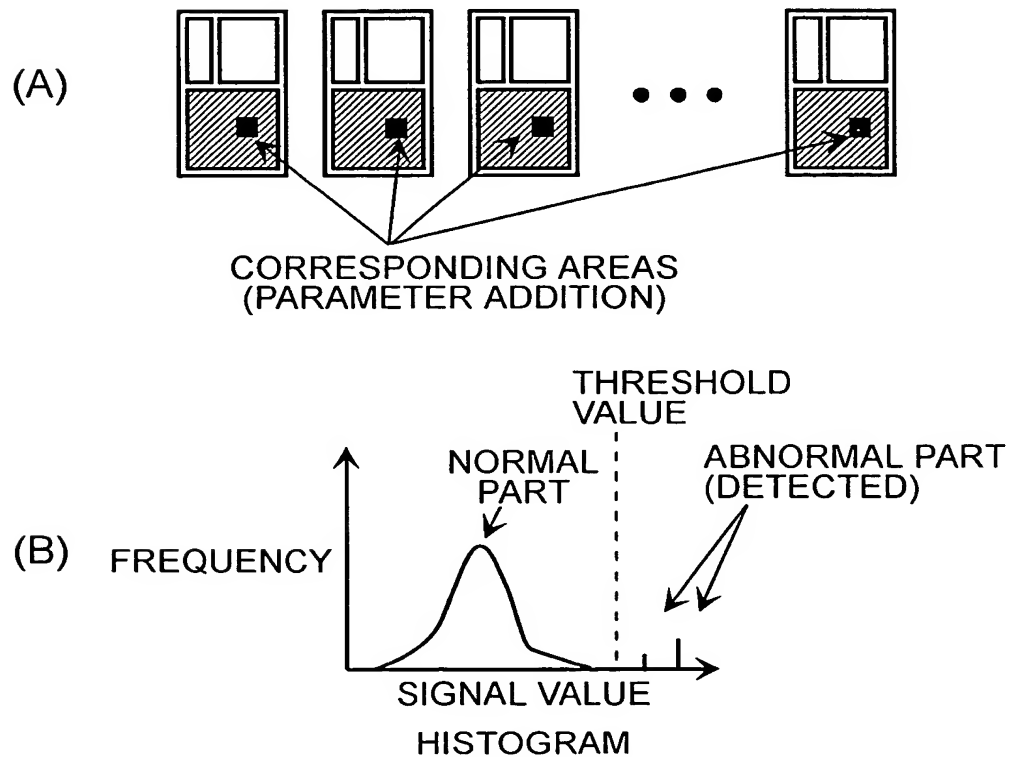ə: Semiconductor Device Inspection Method
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FIG.11

VOID

Cu WIRING PORTION
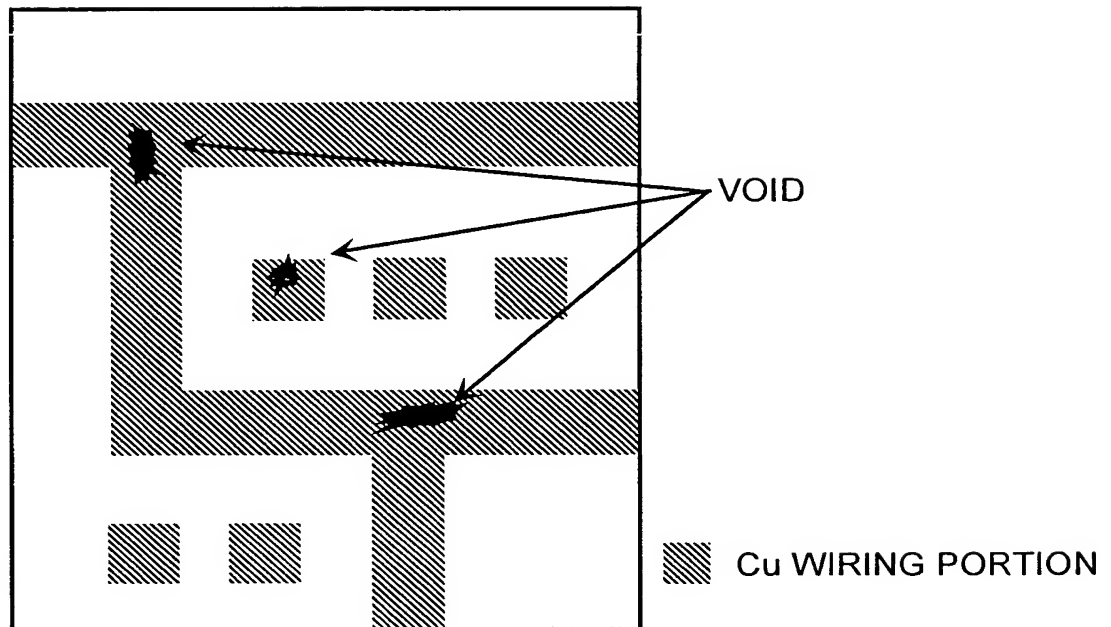
AUTOMATIC DEFECT CLASSIFICATION
TECHNOLOGY

FIG.12

(A)

CORRESPONDING
POINT

(B) FREQUENCY

THRESHOLD
VALUE

NORMAL
PART

ABNORMAL PART
(UNDETECTED)

SIGNAL VALUE

HISTOGRAM

FIG.13

(A)

CORRESPONDING AREAS
(PARAMETER ADDITION)

THRESHOLD
VALUE

NORMAL
PART

ABNORMAL PART
(DETECTED)

(B) FREQUENCY

SIGNAL VALUE

HISTOGRAM

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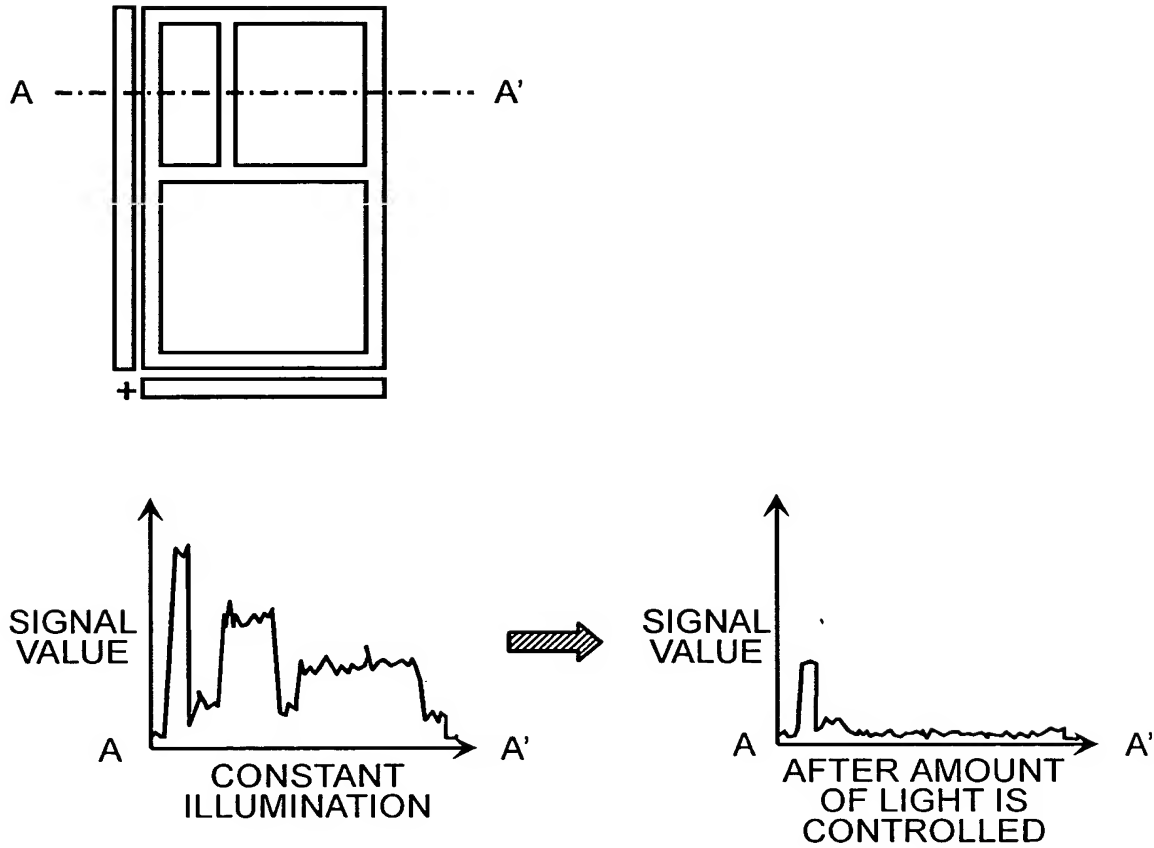
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FIG.14

ESTIMATE THE SIGNAL INTENSITY FROM PATTERN
PITCH AND CONTROL THE AMOUNT OF LIGHT
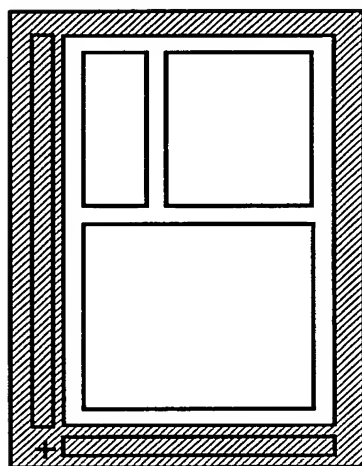
SETTING THE AMOUNT OF LIGHT

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FIG.15

AREAS IN WHICH MANY
FALSE ALARMS OCCUR

SCRIBE AREA
AROUND MEMORY MAT

SETTING AREAS IN WHICH
MANY FALSE ALARMS OCCUR